



AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A burner for use in the manufacture of synthetic quartz glass, comprising a main burner comprising:

a multi-tube assembly of a three ~~or more~~ tube construction consisting of ~~including~~ a center tube for feeding a silica-forming compound, a first outer tube surrounding the center tube for feeding a combustion-supporting gas, and a second outer tube surrounding the first outer tube for feeding a combustible gas;

a first tubular shell surrounding the multi-tube assembly for feeding a combustible gas;

a plurality of first nozzles disposed within the first tubular shell for feeding a combustion-supporting gas;

a second tubular shell surrounding the first tubular shell for feeding a combustible gas;
and

a plurality of second nozzles disposed within the second tubular shell for feeding a combustion-supporting gas.

2. (Original) The burner of claim 1 wherein the total cross-sectional area of gas discharge ports of the first nozzles disposed in the first tubular shell accounts for at least 5% of the cross-sectional area of an annular space between the multi-tube assembly and the first tubular shell.

3. (Currently Amended) The burner of claim 1, wherein the total cross-sectional area of gas discharge ports of the second nozzles disposed in the second tubular shell accounts

for at least 5% of the cross-sectional area of an annular space between the first and second tubular shells.

4. (Original) The burner of claim 1, further comprising a tubular jacket disposed outside the main burner to surround at least an end portion thereof.

5. (New) The burner of claim 1, wherein oxygen gas is fed through the first outer tube.

6. (New) The burner of claim 5, wherein hydrogen gas is fed through the second outer tube.

7. (New) the burner of claim 6, wherein hydrogen gas is fed through the first and second tubular shells.

8. (New) The burner of claim 7, wherein oxygen gas is fed through the first and second nozzles.

9. (New) A method for producing a synthetic quartz glass ingot comprising feeding a silica-forming compound, a combustible gas and a combustion-supporting gas to the burner of claim 1.

10. (New) The burner of claim 2, wherein the total cross-sectional area of gas discharge ports of the first nozzles disposed in the first tubular shell accounts for 8 to 13% of the cross-sectional area of an annular space between the multi-tube assembly and the first tubular shell.

11. (New) The burner of claim 10, wherein the total cross-sectional area of gas discharge ports of the second nozzles disposed in the second tubular shell accounts for 8 to 13% of the cross-sectional area of an annular space between the first and second tubular shells.

12. (New) A burner for use in the manufacture of synthetic quartz glass, comprising a main burner comprising:

a multi-tube assembly of a three tube construction consisting of a center tube for feeding a silica-forming compound, a first outer tube surrounding the center tube for feeding a combustion-supporting gas, and a second outer tube surrounding the first outer tube for feeding a combustible gas;

a first tubular shell surrounding the multi-tube assembly for feeding a combustible gas;

a plurality of first nozzles disposed within the first tubular shell for feeding a combustion-supporting gas;

a second tubular shell surrounding the first tubular shell for feeding a combustible gas;

a plurality of second nozzles disposed within the second tubular shell for feeding a combustion-supporting gas; and

a tubular jacket disposed outside the main burner,

wherein

the total cross-sectional area of gas discharge ports of the first nozzles disposed in the first tubular shell accounts for 8 to 13% of the cross-sectional area of an annular space between the multi-tube assembly and the first tubular shell, and

wherein

the total cross-sectional area of gas discharge ports of the second nozzles disposed in the second tubular shell accounts for 8 to 13% of the cross-sectional area of an annular space between the first and second tubular shells.

13. (New) A method for producing a synthetic quartz glass ingot comprising:

feeding a silica-forming compound, a combustible gas and a combustion-supporting gas to a burner to form fine silica particles; and

melting and vitrifying the fine silica particles,

wherein

the burner comprises a multi-tube assembly of a three tube construction consisting of a center tube for feeding the silica-forming compound, a first outer tube surrounding the center tube for feeding the combustion-supporting gas and a second outer tube surrounding the first outer tube for feeding the combustible gas, a first tubular shell surrounding the multi-tube assembly, a plurality of first nozzles disposed within the first tubular shell, a second tubular shell surrounding the first tubular shell and a plurality of second nozzles disposed within the second tubular shell.